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# Curriculum differentiation and social inequality in higher education entry in Scotland and Ireland

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This paper examines the relative importance of upper secondary subject choice and attainment in explaining social inequalities in access to higher education (HE) in Scotland and Ireland. These two countries differ in the extent of curriculum differentiation, in the degree of standardisation in school examination and in HE entry criteria. In particular, in Scotland subject choice in upper secondary education is more differentiated (both in terms of number and type of subjects taken) and allocation of places in HE is less standardised and more dependent upon the subjects studied at school than in Ireland. Given these institutional differences, we expected subject choices to be more important for explaining social origin differences in HE entry and access to prestigious institutions in Scotland than in Ireland. Because of increasing student competition for HE places, we further hypothesised the growing importance of school subjects over time in mediating social inequalities in HE entry in both countries, more so in Scotland than in Ireland. Our results confirm that subject choice is a stronger mediator of social inequalities in HE entry and access to prestigious universities in Scotland while attainment is more important in Ireland. Contrary to our expectations, the role of subject choice in HE entry has not become more important over time. However, in Scotland subject choice continues to be a strong mediator for social inequalities in HE entry.

**Keywords:** social inequality; curriculum differentiation; HE entry; Scotland; Ireland

## Introduction

Much research has shown that social origin is one of the main, if not the most, important factor that affects educational attainment. In many countries the expansion of education has led to a reduction in social differentiation in post-compulsory educational participation. However, inequalities have by no means disappeared. Substantial social class differences remain in the probability of entering higher education (HE) (see, for example, Strand, 2014). These differences are mostly explained by social class differences in academic achievement at the end of lower and upper secondary levels (Crawford & Vignoles, 2010). However, the potential role that school subject

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[Correction added on 22 April 2016 after first online publication: The third author's current address was included].

choices play in channelling young people towards, or indeed away from, higher education has been neglected, a lacuna we address in this paper.

There is a large body of research on the ‘secondary effects’ of social origin, that is, effects that do not directly depend on ascriptive factors (e.g. abilities) but are linked to preferences and constraints that are influenced by the cultural and socio-economic circumstances of the family of origin (Boudon, 1974; Jackson, 2013; Jackson *et al.*, 2007; Neugebauer & Schindler, 2012). However, research has tended to overlook the role of subject choice in the reproduction of social inequalities in educational achievement—for notable exceptions, see Ayalon (2006), Ayalon & Gamoran (2000) and Van de Werfhorst *et al.* (2003). The neglect of a systematic analysis of the role of subject choice is important for two reasons. First, it potentially results in a partial understanding of the factors influencing educational inequality since it fails to recognise the cumulative consequences of a series of choices during the course of secondary education. Second, from a policy perspective, it means that widening participation initiatives that focus only on attainment at secondary school may be limited in what they can achieve since they do not address deep-rooted inequalities in educational pathways. Higher social-class students are likely to make educational choices (such as studying a greater number of subjects, in particular, academic subjects, and entering HE) aimed at maintaining their social advantages (Boudon, 1974; Breen & Goldthorpe, 1997). Their family’s socio-cultural and economic resources help them to achieve this goal by providing information on the means (e.g. the education pathways to follow) and providing the support needed. In contrast, the decisions of lower social-class students may be less informed by this ‘insider’ knowledge and more influenced by fear of failure (owing to their limited family resources). This can in turn translate into taking safer options, such as shorter and less demanding educational pathways.

Cross-country comparative research on educational inequalities has shown that different national education systems are associated with different degrees of inequality (Blossfeld & Shavit, 1993; Erikson & Jonsson, 1996; Pfeffer, 2008; Breen *et al.*, 2009). Inequalities of opportunities tend to be larger in countries where large ‘secondary effects’ of educational choices exist (Jackson & Jonsson, 2013). The chances of children from poorer backgrounds accessing the highest levels of education, and in turn their chances of obtaining better labour market outcomes, are affected by institutional features such as the extent and timing of school tracking (Hanushek & Wößmann, 2006; Brunello & Checchi, 2007; Horn, 2009, 2013; Van Elk *et al.*, 2011), within-school curriculum differentiation (Ayalon & Gamoran, 2000; Van de Werfhorst *et al.*, 2003; Ayalon, 2006; Iannelli, 2013) and forms of assessment (Muller & Schiller, 2000; Horn, 2009; Bol *et al.*, 2014). While the literature on curriculum differentiation has mainly focused on tracking and the distinction between vocational and academic curricula, less attention has been paid to curriculum differences within academic programmes.

In this paper, we use a macro-level perspective to analyse the extent to which the choice of specific subjects in secondary education accounts for social origin differences in HE entry in Scotland and Ireland. These two countries provide interesting test cases for analysing the effects of different degrees of curriculum differentiation and varying entry requirements on the extent of social inequality in HE entry. By

analysing the Scottish and Irish cases that vary in the degree of institutional standardisation and differentiation (Allmendinger, 1989), this paper aims to offer a better understanding of the mechanisms by which institutional characteristics influence the unequal distribution of educational outcomes in Scotland and Ireland. The paper will address the following questions:

- (1) Are there country variations in the extent to which subject choices explain social class differences in the chances of entering HE and in the chances of entering the most prestigious institutions?
- (2) Does subject choice explain social class differences in the chances of entering HE more than educational attainment in Scotland? And if so, does Ireland differ in this respect?
- (3) Does subject choice matter more in an expanded HE sector? Are there country differences in these patterns?

## **Theoretical background**

### *Variations in education systems: standardisation and stratification*

In our study we use Allmendinger's distinction between two dimensions of education systems: 'standardisation' and 'stratification' (Allmendinger, 1989). 'Standardisation' refers to the degree to which the quality of education meets the same standards nationwide; more standardised systems have a higher degree of uniformity in the school-leaving examination, teacher education, school budgets and curricula. 'Stratification' is mostly associated with the extent to which secondary education is divided into distinct tracks. Where stratification is high (e.g. as in Germany, Switzerland and the Netherlands), students are separated early on into tracks that differ greatly in their curricula and in the odds that students will continue to the tertiary level. In contrast, in less stratified countries (e.g. USA, UK and Ireland), differentiation of curriculum begins at a later stage and smaller differences exist in the chances of continuing to tertiary level for people who studied different curricula.

The findings from the international literature on the role of 'standardisation' and 'stratification' in the reproduction of social inequalities in education can be summarised as follows: more standardised systems tend to produce more egalitarian educational outcomes while stratification, which is mainly measured by the divide between vocational and academic tracks and the time at which selection into tracks occurs, tends to increase social gaps in achievement and thus reduces the chances of working-class individuals progressing to further studies and achieving better occupational outcomes (Van de Werfhorst & Mijs, 2010). This is because they are more likely to be channelled into vocational tracks, which in turn reduces their opportunities for accessing HE and social mobility (Dustmann, 2004; Van Elk *et al.*, 2011; Neugebauer & Schindler, 2012).

Some studies have analysed in more detail the role of different fields of study (Van de Werfhorst *et al.*, 2003) and non-hierarchical curriculum differentiation (Ayalon, 2006) in the reproduction of social inequalities. Ayalon's work (2006) found that in

the Israeli secondary system, where students can choose between different types of subjects in addition to core compulsory courses, subject differentiation reproduced social inequalities in achievement. Ayalon (2006) attributes this pattern to the perceived 'appropriateness' of certain types of subjects for different social groups rather than to individuals' preferences and abilities.

The interplay between standardisation and stratification is analysed in another study by Ayalon and Gamoran (2000). The authors found that curriculum differentiation accompanied by a more standardised examination system in Israel led to a reduction in inequalities in achievement that was not found in the USA where similar curriculum reforms were implemented in a much less standardised context. Following the same line of thinking, Bol *et al.* (2014) compared the effect of social background on student achievement in 36 countries characterised by different degrees of standardisation in school examinations and curriculum stratification and reached the same conclusions. In countries where central examinations are prevalent in the secondary-school system, the level of social inequality in educational achievement that is related to the use of tracking is reduced.

### *Ireland versus Scotland*

Both the Scottish and Irish educational systems are weakly stratified in terms of tracking. Secondary schooling takes place in schools that are broadly comprehensive in orientation and is compulsory until the age of 16. Both systems differ substantially in terms of *horizontal curriculum differentiation* in post-compulsory schooling.<sup>1</sup> In Ireland upper secondary students typically take six to eight subjects (usually seven) in the Leaving Certificate exam. All students are required to take English, maths and Irish. In Scotland students can choose between different subjects (with no core subjects that all students need to study) and sit the corresponding exams in the 5th and 6th years of secondary schooling. Students can choose not only the type of subjects but also the number of subjects to study. The majority of Scottish students sit exams in five or six subjects in upper secondary education. In both systems, the extent to which take-up of subject reflects student preference, school allocation or teacher preference varies across and within schools.

Furthermore, both countries differ in terms of the *standardisation of HE entry requirements*. We expect that the less standardised is HE admission, the more important are other criteria than performance, such as the number and type of subjects studied at secondary level. In Ireland student applications are centralised nationally through the Central Applications Office (CAO). At least in theory, all those who take the Leaving Certificate exam can go on to HE. Students can specify up to 10 choices (in rank order) for degree courses and 10 for sub-degree courses. Students are allocated 'points' on the basis of the grade received and level taken in the Leaving Certificate exam. The results for the 'best' six subjects are used for points purposes. The points required for specific courses reflect the number of places offered and the grade profile of applicants. Overall, HE entry is largely determined by grades in the Leaving Certificate with relatively little attention paid to the subjects taken (with a few exceptions, such as science degrees).

In Scotland as in the rest of the UK, the Universities and Colleges Admissions Service (UCAS) is the administrative body responsible for processing almost all applications for full-time study at HE level nationally. Applicants submit a single application via UCAS's website with a list of up to five preferred courses and institutions. The applications are then forwarded by UCAS to the institutions concerned, who decide whether to make an offer of a place. HE entry is determined by a combination of achievement and subject choice: for entering the university sector usually a minimum of three Highers at A–C level is required. Each university and, within it, each discipline can establish specific subject requirements as entry pre-requisites and thus there is some variation in entry criteria across institutions and fields of study. However, to enter the most prestigious universities and fields of study students need to obtain good grades at upper secondary level but they also need to achieve good grades in more demanding subjects (also called 'facilitating' subjects, see Russell Group, 2011). Thus, subject choice plays a strong role in accessing (elite) universities regardless of field of study, a feature which makes the system very distinct from that in Ireland.

We expect that in Scotland because of the lack of a standardised certification system in which students need to take a certain number of compulsory subjects to complete secondary education and qualify for entry into HE, and the secondary effects of parental background on horizontal curriculum differentiation, the choice of subjects will play a more important role than academic achievement in the chances of students entering HE. In Ireland, instead, we expect that social class differences in HE entry will be mostly mediated by attainment, with subjects playing only a minor role.

### *Educational expansion and the mediating role of subject choice*

The 1990s and the beginning of the 21st century have seen considerable expansion in HE participation, a pattern that is evident in Scotland and Ireland, which have experienced roughly similar levels of growth in HE. Thus, we expect that curriculum differentiation may have increased in importance over time in Scotland (but less so in Ireland where achievement matters more for entry into HE). This is because children from higher social classes may increasingly feel the need to differentiate themselves from their less advantaged peers in terms of attainment when upper secondary education becomes more widespread among the lower classes [according to the Effectively Maintained Inequality (EMI) perspective, Lucas, 2001]. Choosing different subjects is a means for higher-class students to maintain 'qualitative' advantages compared with lower-class students. Likewise, HE institutions may have increasing difficulties in selecting able students from the growing pool of applicants as participation in upper secondary education can no longer be taken as a strong indicator of higher abilities. Therefore, they may tighten their admission criteria and increasingly require students to have taken exams in particular subjects.

### *Hypotheses*

Given these theoretical considerations and the institutional country differences highlighted above, we postulate three hypotheses.



*Hypothesis 1:* Subject choice is a stronger mediator of class of origin differences in HE entry in Scotland than in Ireland. By contrast, class of origin differences operate more strongly via achievement in Ireland than in Scotland.

*Hypothesis 2:* Subject choice has a particularly strong influence on entry to the most prestigious institutions in Scotland while overall exam performance is more influential in the Irish context.

*Hypothesis 3:* Educational expansion is associated with a stronger mediating role for subject choice in HE entry, more so in Scotland than in Ireland.

## Data and methods

We use a series of Scottish and Irish School-Leavers' Surveys covering the period from the end of the 1980s to the 2000s: 1987, 1989, 1991, 1993, 1999, 2001 and 2005. The data therefore cover an important period of expansion in participation in upper secondary and higher education in both countries (see below). Limiting the analyses to school leavers excludes consideration of mature student entry, a growing phenomenon in both countries. However, focusing on school leavers provides a more stringent test of the potential role of class of origin and subject choice in shaping immediate post-school pathways. In both countries, the sample analysed includes students who continued to study in upper secondary education.<sup>2</sup>

The Scottish School-Leavers' Survey was a nationally representative survey of young people aged 16–17 who attended all kinds of schools except special schools. The Scottish data were taken from the youth cohort time series for England, Wales and Scotland, 1984–2002 (UK Data Archive, SN: 5765) constructed within the project 'Education and youth transitions in England, Wales and Scotland 1984–2002 (EYT)' (Croxford *et al.*, 2007). Since the last school leaver cohort was not included in this time series, data from the 2005 survey were added and harmonised with the other cohorts following the guidelines of data construction used for EYT data. While parental background information was collected in the initial survey after compulsory schooling (typically in the spring of the year following the end of compulsory schooling), information on subject choice in years 5 and 6 of secondary school (S5 and S6) and on HE participation refers to the follow-up surveys one and two years after pupils finished compulsory education.

The Irish School-Leavers' Survey was a regular nationally representative survey of young people who left secondary school in the previous academic year. The survey collected detailed information on the educational and labour market experiences of young people in the period since leaving school as well as collecting retrospective information on their school experiences and grades achieved. The survey was conducted from 1980 to 2007. The core information collected by the survey remained comparable over time but detailed information on examination performance was collected only from 1984 onwards.

HE entry is measured with a binary variable differentiating between students who entered full-time education at age 18/19 and those who did not. With regard to HE

institutions in Scotland, we differentiate between ancient universities, old universities, new universities, Further Education (FE) colleges and institutions outside Scotland. The four ancient universities of St Andrews, Glasgow, Aberdeen and Edinburgh were founded in the fifteenth and sixteenth centuries. In the 1960s, four old universities were created as part of the expansion of UK HE: Strathclyde, Heriot-Watt, Dundee and Stirling. Polytechnic colleges constituted a sector of advanced technical and professional education until 1992. As in the rest of the UK, Scottish HE developed from a binary system to a diversified system. In 1992, polytechnic colleges were re-labelled as HE institutions and five of them became universities: Paisley, Caledonian, Napier, Robert Gordon and Abertay. They are commonly referred to as *new universities*. HE is also provided in over 40 local Further Education (FE) colleges. They were set up mainly in the 1950s as vocational colleges.<sup>3</sup> The final and smallest sector encompasses institutions outside Scotland.

There are two main types of HE institutions in Ireland: universities and institutes of technology. The university structure encompasses recognised colleges, including art colleges and colleges of education. Regional Technical Colleges (RTCs) were set up from the 1960s to provide sub-degree courses in technical areas. They were intended to supply the regional labour market and thus promote economic development. In the 1990s, these colleges were re-designated as institutes of technology, with an expansion over time to cover degree and post-graduate degree courses across a range of disciplines.<sup>4</sup> In effect, this resulted in a shift from a binary system, with institutes of technology providing mid-level technical skills and universities providing academic programmes, to a diversified system in which both types of institution provide academic courses. Using Arum *et al.*'s typology (2007), both the Scottish and Irish systems can be characterised as (highly) diversified.

*Social class of origin* is measured using the European Socio-economic classification (ESeC) (Rose & Harrison, 2010). We use the 'dominance principle': the highest class position among parents determines one's class of origin (Erikson, 1984). Five classes of origin are differentiated: higher-salariat class (ESeC 1), lower salariat class (ESeC 2), intermediate class (ESeC 3–6) and working class (ESeC 7–9) and 'unclassified', which includes parents who are long-term unemployed or who have never been employed. In the analyses, social class has been included as a set of dummy variables.

*Curriculum differentiation in upper secondary education* is measured by the choice of 12 different subject groups.<sup>5</sup> In our analysis we follow the distinction made by the Russell Group universities in the UK (Russell Group, 2011) which differentiates between facilitating subjects and non-facilitating subjects in upper secondary curricula. The facilitating subjects comprise English, languages, maths, biology, chemistry, physics, geography, history and they are so called because they facilitate access to the Russell Group universities in the UK. In the Irish case we include Irish among the facilitating subjects since this is a compulsory subject for achieving the Leaving Certificate. By contrast, the non-facilitating subjects group comprises business (e.g. management, accountancy or bookkeeping), technology (e.g. engineering, wood work or metal work), arts and social sciences (e.g. art, music, classical studies or social and political education) and a mix of other subjects (such as home economics, physical education or religious education) that are supposed to be less valued for selection into



the most prestigious HE institutions. The subjects English, Irish, biology, chemistry, physics, geography and history are coded as binary dummies indicating whether pupils have studied or not studied the respective subject. Since students may study more than one course in maths, languages, business, technology, arts and social sciences, and others, the information on these subjects is categorised as 'not studied', 'studied one subject' and 'studied two or more subjects'.

Performance within subjects was coded as a set of continuous variables by using the 'UCAS point score'. This tariff score takes pupils' grades and level of studies in upper secondary education into account and is defined by UCAS, which processes applications for undergraduate courses in the UK (Croxford *et al.*, 2007, p. 67). Recently, UCAS introduced tariff tables for the Irish Leaving Certificate that we use to construct the subject-specific performance measure for Irish students.<sup>6</sup> We standardised these scores across countries and time.

In our analyses we control for gender and school characteristics. For Scotland, we differentiate between state schools and independent schools and between Roman Catholic schools and non-denominational schools. For Ireland, we differentiate between voluntary secondary schools, vocational schools and comprehensive schools.<sup>7</sup>

Our comparison over time includes four different cohorts 1987–1991, 1993, 1999–2001 and 2005. We distinguish between 1987–1991 and 1993 in order to capture social inequalities in HE entry before and after the upgrading of polytechnics in 1992. For Ireland, we restrict our analysis to three cohorts because of a large proportion of missing data for subject choice and performance in the cohort 1999/2001.<sup>8</sup> After list-wise deletion our analytical sample consists of a total of 21,874 cases (6270 for Ireland, 15,604 for Scotland).<sup>9</sup>

Appendix Table A1 shows descriptive statistics for both countries and across cohorts. HE participation among upper secondary students in Scotland sharply increased from the beginning of the 1990s, but declined again in the 2000s which is in line with a falling age participation index in Scotland since 2000 (Scottish Executive, 2006). In Ireland, enrolment rates in HE increased as well but not as strongly as in Scotland. However, the decrease in the youngest cohort was also not as substantial as in Scotland. Across cohorts, Scottish students increasingly entered old universities and FE colleges and decreasingly attended new universities. A slightly larger proportion of Irish students entered universities rather than institutes of technologies in the last two cohorts analysed.

Scottish upper secondary students are more likely to come from higher social classes of origin (ESec1 and 2) than Irish students. This may be due to two factors: differences in educational inequality or differences in the prevalence of high-skilled occupations in the two systems.<sup>10</sup> Over time, we see reverse developments: the share of working-class students attending upper secondary education increases in Scotland, while it decreases in Ireland.

Irish secondary students take, on average, more subjects than Scottish students. Furthermore, variation in the number of subjects taken is noticeably smaller among Irish than among Scottish students. Scottish and Irish pupils study, on average, more subjects in the mid-2000s than at the end of the 1980s. This increase is more substantial in the Scottish than in the Irish case. A fair proportion of Scottish students do not

take English and in particular maths in upper secondary education (even though the trend is towards an increasing proportion of students taking maths). The most salient between-country discrepancy is evident for languages: while more than three-quarters in Ireland study at least one foreign language, less than one-quarter study one language in Scotland. Over time, the proportion of students taking non-facilitating subjects has increased more than the proportion of students enrolling in core subjects. This is evident more so in Scotland than in Ireland. In contrast, the proportion of students who study chemistry or physics has been decreasing in both countries.

For our multivariate analysis we use binary logit models predicting HE entry for every cohort and each country separately. Subsequently, we conduct multinomial logit models differentiating between six categories (no HE entry, ancient university, old university, new university, FE college, institution outside Scotland) for Scotland and three categories (no HE entry, university, institute of technology) for Ireland.

We consider five nested non-linear probability models for each cohort and each country. The first model (M1) controls for gender and school characteristics and indicates the 'gross' effect of class of origin on the probability of participating in HE. The second model (M2) includes the number of non-facilitating subjects and the third model (M3) the number of facilitating subjects. The fourth model (M4) replaces the number of subjects with 12 subject-group dummies and thus tests the relevance of particular subjects within the broader groups of facilitating and non-facilitating subjects. By comparing the second and the third models with the fourth model we can identify the extent to which class of origin differences are due to differences in the number of subjects taken or in the type of subjects studied. The final model (M5) replaces the subject dummies with the subject-specific UCAS point scores and thus additionally tests the mediating role of performance within subjects. Because estimates are presented separately for both countries and for each cohort, in the results sections we discuss changes over time alongside between-country differences.

In order to compare the estimates across nested non-linear probability models, across the two countries as well as cohorts over time, we calculate average marginal effects (AMEs) from both logit and multinomial logit models. Unlike log-odds-ratios or odds-ratios, AMEs are not biased by uncorrelated unobserved heterogeneity and thus solve the rescaling problem in comparisons across models, samples or groups (Mood, 2010). We control for the clustering of students within schools by estimating cluster-robust standard errors in all analyses.

## Results

### *Class of origin and subject choice in upper secondary education*

Figure 1 shows the bivariate relationship between class of origin and the number of facilitating versus non-facilitating subjects in upper secondary education. The upper graphs display this association for Scotland, the lower graphs for Ireland.

In Scotland, students from different classes of origin differ markedly in the number of facilitating subjects taken. At the end of the 1980s, higher-salariat class students studied, on average, four subjects, while working-class students took only 2.5 subjects, a difference that remained largely constant over time. In contrast, students from

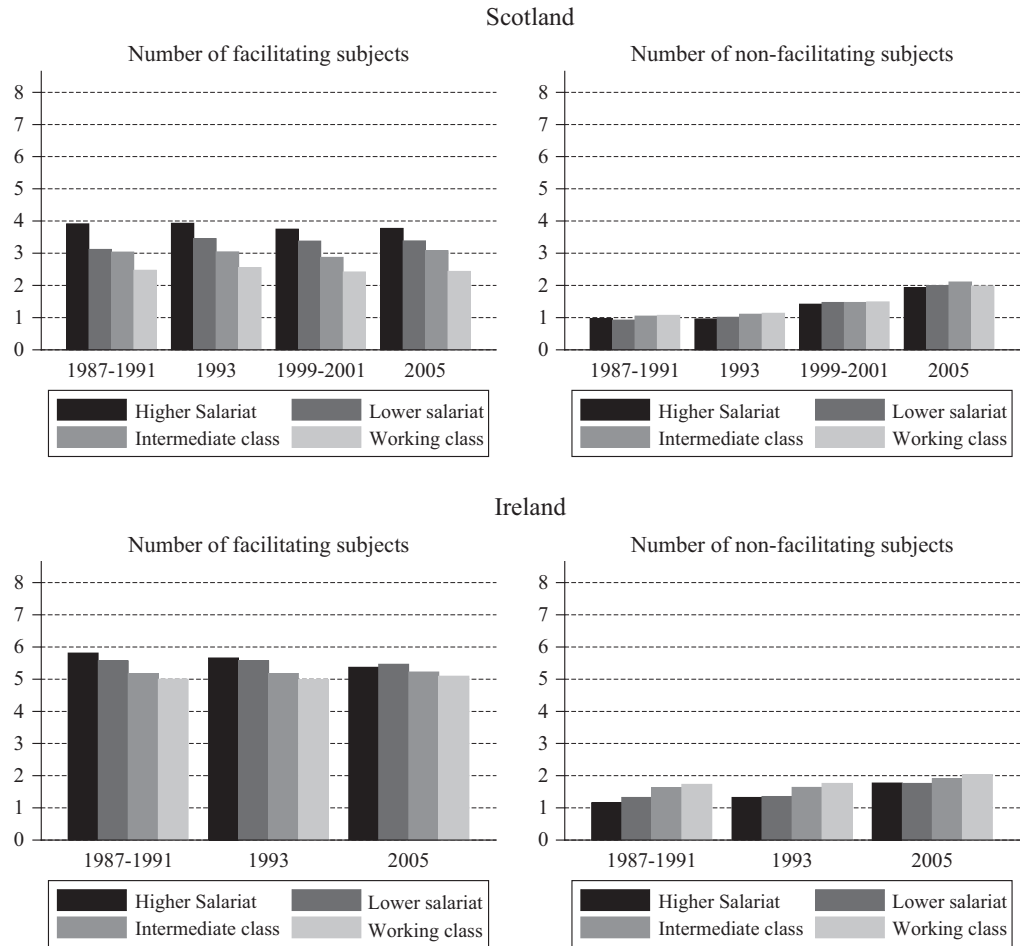


Figure 1. Class of origin and subject choice.  
Source: Scottish and Irish School Leavers Surveys, weighted.

different class backgrounds do not differ, on average, in the number of non-facilitating subjects taken, a pattern that does not vary over time. However, in the 2005 cohort young people study, on average, one non-facilitating subject (business, technology, arts and social sciences and others) more compared with older cohorts. Overall, these results show that higher-class students in Scotland take substantially more subjects in upper secondary education than lower-class students and this is exclusively due to the higher number of facilitating subjects taken, which are considered particularly important for entering HE, especially the most prestigious universities in the UK.

In Ireland, we can also identify class of origin differences in the mix of subjects taken at upper secondary level. Higher-class students take more facilitating or academic subjects<sup>11</sup> than lower-class students, while, at the same time, study fewer non-facilitating subjects than their counterparts. Hence, on average, students from different classes of origin do not differ in terms of the overall number of subjects stud-

ied. Class of origin differences in the portfolio of taken subjects are clearly not as strong as in Scotland. Across cohorts, Irish students from different social backgrounds became increasingly similar over time in their choice of subjects.

### *Class of origin, curriculum differentiation and HE entry*

Results from the five models described in the 'Data and methods' section are presented in Table 1. This table reports AMEs for students from higher salariat (ESeC 1), lower salariat (ESeC 2) and intermediate (ESeC 3–6) classes, on the probability of entering HE in comparison with the working class (ESeC 7–9) for each cohort and each country. The column 'M1–M4%' indicates the percentage of the 'gross' AME in model 1 that is explained by the introduction of subject choice in our model. The column 'M4–M5' shows the further percentage reduction in the AME when subject-specific performance is added to the model. The last column 'Unexpl.' shows the percentage of the AME that remains unexplained by subject choice and performance. For the full models including estimates for all control variables and mediating factors see Tables S1–S7 in the Supplementary Material.

Starting with the oldest cohorts, at the end of the 1980s, the gross AME (M1) for students from higher-salariat class is similarly large in both countries. In Ireland and Scotland, higher-salariat class students have, on average, almost a 30 percentage point higher probability of entering HE than working-class students. While AMEs for students from intermediate and lower salariat class are large and significant as well, the AME is much stronger for lower salariat class students in Ireland (0.21 versus 0.14 in Scotland). Controlling for the number of non-facilitating subjects (M2) does not explain the social class gap in HE entry in Scotland. By contrast, taking the number of facilitating subjects (M3) into account largely reduces class of origin differences in the probability of entering HE. In Ireland, both the number of non-facilitating and facilitating subjects can explain a small part of the social class gap (for ESeC 1 and 2) but compared with Scotland the AME reduction linked to the facilitating subjects is small. Replacing the number of subjects with the single subject dummies (M4) adds little to the explanation of class of origin differences in Scotland. This result indicates that within-group differences among the facilitating subjects are of little importance for HE entry. Social inequalities in HE entry are mostly explained by the number of facilitating subjects taken in Scotland. In contrast, in Ireland, the introduction of subject dummies further reduces the AMEs of salariat and intermediate classes. Hence, the composition and choice of particular subjects rather than the number of subjects seems to be relevant in Ireland (indeed our descriptive statistics also showed few social class differences in the number of subjects taken).<sup>12</sup> While around two-thirds (57–70%) of the gross association between social origin and HE entry can be explained by subject choice in Scotland, only two-fifths (39–43%) of this association for the highest social classes and 11% for intermediate classes (ESeC 3–6) can be explained by subject choice in Ireland. Replacing these subject indicators with subject-specific UCAS point scores performance adds little to the explanation of class origin differences in Scotland (0–14%). In contrast, AMEs for all classes compared with the working class substantially decrease in Ireland when taking performance into account (29–56%). Overall, this analysis provides evidence for the *first hypothesis*:

Table 1. The mediating role of subject choice and performance for class of origin effects on HE entrance

	M1	M2	M3	M4	M5	M1–M4 (%)	M4–M5 (%)	Unexpl. (%)
<i>Scotland</i>								
ESeC 1								
1987–1991	0.29*** (0.02)	0.29*** (0.02)	0.11*** (0.01)	0.09*** (0.01)	0.06*** (0.01)	69	10	21
1993	0.29*** (0.03)	0.29*** (0.03)	0.11*** (0.03)	0.10*** (0.03)	0.08** (0.03)	66	7	27
1999–2001	0.26*** (0.02)	0.27*** (0.02)	0.12*** (0.02)	0.11*** (0.02)	0.08*** (0.02)	58	12	30
2005	0.21*** (0.03)	0.21*** (0.03)	0.09*** (0.03)	0.07** (0.02)	0.00 (0.02)	67	33	0
ESeC 2								
1987–1991	0.14*** (0.02)	0.14*** (0.02)	0.06*** (0.01)	0.06*** (0.01)	0.04*** (0.01)	57	14	29
1993	0.21*** (0.03)	0.21*** (0.03)	0.09*** (0.03)	0.08*** (0.03)	0.07*** (0.02)	62	5	33
1999–2001	0.22*** (0.02)	0.22*** (0.02)	0.12*** (0.02)	0.11*** (0.01)	0.09*** (0.01)	50	9	41
2005	0.15*** (0.02)	0.15*** (0.02)	0.07*** (0.02)	0.06*** (0.02)	0.02 (0.02)	60	27	13
ESeC 3–6								
1987–1991	0.10*** (0.02)	0.10*** (0.02)	0.04** (0.01)	0.03* (0.01)	0.03** (0.01)	70	0	30
1993	0.10*** (0.03)	0.10*** (0.03)	0.03 (0.03)	0.04 (0.03)	0.03 (0.02)	60	10	30
1999–2001	0.10*** (0.02)	0.10*** (0.02)	0.05** (0.02)	0.04** (0.02)	0.04* (0.02)	60	0	40
2005	0.11*** (0.03)	0.11*** (0.03)	0.04 (0.03)	0.04 (0.02)	0.02 (0.02)	64	18	18
<i>Ireland</i>								
ESeC 1								
1987–1991	0.28*** (0.02)	0.25*** (0.02)	0.22*** (0.01)	0.17*** (0.02)	0.08*** (0.02)	39	32	29
1993	0.23*** (0.05)	0.20*** (0.04)	0.15*** (0.05)	0.12** (0.04)	0.02 (0.04)	48	43	9
2005	0.15*** (0.04)	0.14*** (0.04)	0.14*** (0.04)	0.10* (0.04)	–0.02 (0.04)	33	67	0
ESeC 2								
1987–1991	0.21*** (0.02)	0.19*** (0.02)	0.17*** (0.02)	0.12*** (0.02)	0.06*** (0.02)	43	29	28
1993	0.25*** (0.04)	0.22*** (0.04)	0.18*** (0.04)	0.13*** (0.04)	0.07* (0.04)	48	24	28
2005	0.15*** (0.04)	0.14*** (0.04)	0.13*** (0.04)	0.10* (0.04)	–0.01 (0.04)	33	67	0
ESeC 3–6								
1987–1991	0.09*** (0.02)	0.09*** (0.02)	0.09*** (0.02)	0.08*** (0.02)	0.03* (0.01)	11	56	33
1993	0.16*** (0.03)	0.16*** (0.03)	0.15*** (0.03)	0.13*** (0.02)	0.06* (0.02)	19	44	37
2005	0.10* (0.04)	0.10* (0.04)	0.10* (0.04)	0.09* (0.04)	0.03 (0.04)	10	60	30

Source: Scottish and Irish School-leavers Surveys, unweighted.

Notes: Reference category: working class (ESeC 7–9); M1=gender + school characteristics, M2=M1+ number of non-facilitating subjects, M3=M1+ number of facilitating subjects, M4= M1+subject dummies, M5=M1+ subject-specific UCAS scores; effects shown as average marginal effects; cluster-robust standard errors in parentheses; \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

Subject choice is a stronger mediator of social inequalities in HE entry in Scotland than in Ireland. By contrast, social inequalities are mostly explained by achievement in Ireland. Controlling for subject choice and performance, net class of origin differences remain significant in both countries at the end of the 1980s.

The gross AME for the higher-salariat class reduced across cohorts, particularly in the last cohort, more so in Ireland (0.28 to 0.15) than in Scotland (0.29 to 0.21). This reduction from cohort 1987–1991 to cohort 2005 was identified as significant at the 1% level in both countries. However, differences between the lower salariat class and the working class first increased and decreased again in the youngest cohort. While this AME became smaller in the latest cohort in Ireland, it only reaches the level of the oldest cohort in Scotland. Differences between intermediate and working classes in HE entry remained constant over time in both countries. Nevertheless, overall class inequalities in entering HE tended to decline over the course of educational expansion.

We cannot find evidence of an increasing role of subject choice in explaining social class differences in HE entry (see column ‘M1–M4%’). Hence, we cannot find support for our *third hypothesis*. However, the intermediary role of subject choice remained a strong mediator for social inequalities in HE entry in the Scottish case. In contrast, the mediating role of subject choice reduced across cohorts in Ireland. These results strongly support our *first hypothesis*.

In both institutional settings, especially in Ireland, achievement became a stronger mediator of class of origin differences in HE entry over time (see column ‘M4–M5%’). Consequently, social inequalities are less mediated by unobserved factors over time. In fact, class of origin differences net of subject choice and performance became insignificant at the 5%-level in the youngest cohort in both countries. In other words, all social class differences in HE entry could be explained by secondary-school subject choice and performance in the 2005 cohort.

### *Class of origin, curriculum differentiation and choice of HE institution*

Table 2 shows class of origin differences in terms of AMEs in the choice of HE institution for the respective cohorts in Scotland. Since social inequalities in HE entry are most pronounced for the contrast between the higher-salariat class (ESeC 1) and working class (ESeC 3–6), for the sake of parsimony we show the results for this contrast only and for M1, M4 and M5 in Table 2. For the detailed results see Tables S8–S14 in the Supplementary Material.

For the oldest cohort (1987–1991), considerable gross differences between higher-salariat class and working-class students in the choice of institution are evident in Scotland. Higher-class students have a significantly larger probability of studying at ancient, old and new universities than lower-class students, with the class gap particularly pronounced in access to ancient universities (with a probability difference of 15 percentage points). In contrast, students from different classes do not differ in the probability of going to FE colleges. The differentiated analysis on choice of HE institution confirms that subject choice is a stronger mediator of class of origin differences than performance in Scotland. For instance, in access to ancient universities, the class



Table 2. The mediating role of subject choice and performance for class of origin effects on HE institution in Scotland

	M1	M4	M5	M1–M4 (%)	M4–M5 (%)	Unexpl. (%)
<i>Ancient univ.</i>						
ESeC 1						
1987–1991	0.15*** (0.01)	0.05*** (0.01)	0.01 (0.01)	67	27	7
1993	0.22*** (0.03)	0.13*** (0.03)	0.08*** (0.02)	41	23	36
1999–2001	0.20*** (0.02)	0.10*** (0.02)	0.05*** (0.02)	50	25	25
2005	0.15*** (0.02)	0.07*** (0.02)	0.00 (0.02)	53	47	0
<i>Old univ.</i>						
1987–1991	0.07*** (0.01)	0.03* (0.01)	0.01 (0.01)	57	29	14
1993	0.09*** (0.02)	0.02 (0.02)	–0.00 (0.02)	78	22	0
1999–2001	0.08*** (0.01)	0.02 (0.01)	0.00 (0.01)	75	25	0
2005	0.11*** (0.02)	0.06** (0.02)	0.02 (0.02)	46	36	18
<i>New univ.</i>						
ESeC 1						
1987–1991	0.04*** (0.01)	0.00 (0.01)	0.01 (0.01)	100	0	0
1993	0.01 (0.03)	–0.03 (0.03)	–0.00 (0.03)			
1999–2001	0.01 (0.01)	–0.01 (0.01)	0.01 (0.01)			
2005	0.02 (0.02)	0.00 (0.02)	0.01 (0.02)			
<i>FE colleges</i>						
ESeC 1						
1987–1991	–0.01 (0.01)	–0.01 (0.01)	–0.00 (0.01)			
1993	–0.05** (0.02)	–0.02 (0.02)	–0.00 (0.02)	60	40	0
1999–2001	–0.05*** (0.01)	–0.01 (0.01)	0.01 (0.01)	80	20	0
2005	–0.12*** (0.02)	–0.09*** (0.02)	–0.07** (0.02)	25	17	58

Source: Scottish School-leavers Surveys, unweighted.

Notes: Reference category: working class (ESeC 7–9); M1=gender + school characteristics, M4= M1+subject dummies, M5=M1+ subject-specific UCAS scores; effects shown as average marginal effects; cluster-robust standard errors in parentheses; \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

gap is strongly explained by subject choice (reduction in the AME by 67%) but less so by attainment (reduction in the AME by 27%).

Over the course of educational expansion, higher-class students are less likely to enter FE colleges than working-class students (indicated by the increasing negative coefficient of ESeC.1 across cohorts). After polytechnics gained university status in 1992, social inequalities in access to ancient universities increased (from 15 percentage points to 22 percentage points). Hence, decreasing social inequalities in HE entry in Scotland (see Table 1) came at the cost of increasing social inequalities in entering different types of HE institutions and led to the diversion of working-class students into less prestigious HE institutions (see also Iannelli *et al.*, 2011).

How did the mediating factors of these class inequalities develop over time? The mediating role of subject choice somewhat reduced over time but remained important in access to ancient and old universities (in the 2005 cohort subject choice explained 53% and 46% of the social class gap in the two types of institution). In contrast, performance in subjects studied became a stronger mediator of social class differentials in entering ancient universities (the percentage of the social class gap explained by attainment increased from 27% in the oldest cohort to 47% in the most recent cohort). Interestingly social inequalities in access to FE colleges are less mediated by subject choice and performance in the 2005 cohort. Increasing social class differentials in entering FE colleges seem to be due to an increasing role of ‘unobserved’ factors. Again, we cannot provide evidence for our *third hypothesis*. However, subject choices remain an important mediator of class of origin differences in access to the most prestigious universities in Scotland.

Table 3 illustrates social inequalities in the choice of HE institution for the respective cohorts in Ireland. It clearly shows that social class differentials in access to HE institutions are only evident for universities. Students from the higher salariat and working class do not differ in the probability of entering institutes of technologies across cohorts. Confirming our previous analysis, attainment is an equally strong or even stronger mediator of social class differentials for entering universities than subject choice. Across cohorts, attainment became a more important mediator for social inequalities in entering universities. As with the analysis of HE entry, we find no class inequalities in entering universities among people in the 2005 cohort after taking into account subject choice and performance. Overall, our analysis confirms the *second hypothesis*: subject choice has a stronger influence on entry to the most prestigious HE institutions in Scotland than in Ireland while attainment is more influential in Ireland than in Scotland.

Table 3. The mediating role of subject choice and performance for class of origin effects on HE institution in Ireland

	M1	M4	M5	M1–M4 (%)	M4–M5 (%)	Unexpl. (%)
<i>Univ.</i>						
ESeC 1						
1987–1991	0.26*** (0.02)	0.17*** (0.02)	0.09*** (0.01)	35	31	35
1993	0.28*** (0.04)	0.17*** (0.03)	0.06* (0.03)	39	39	21
2005	0.19*** (0.04)	0.14*** (0.04)	0.00 (0.03)	26	74	0
<i>Inst. of Tech.</i>						
ESeC 1						
1987–1991	–0.02 (0.02)	–0.03 (0.02)	–0.04 (0.02)			
1993	–0.08 (0.04)	–0.06 (0.04)	–0.06 (0.04)			
2005	–0.05 (0.04)	–0.04 (0.04)	–0.04 (0.04)			

Source: Irish School-leavers Surveys, unweighted.

Notes: Reference category: working class (ESeC 7–9); M1=gender + school characteristics, M4= M1+subject dummies, M5=M1+ subject-specific UCAS scores; effects shown as average marginal effects; cluster-robust standard errors in parentheses; \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

## Conclusion

Previous research has often neglected the role of subject choice in shaping social class differentiation in entry to higher education. Our paper aimed to provide new evidence on the role of institutional factors, namely school curriculum, examination and requirements to access HE, in shaping social inequalities in HE entry. We compared Ireland and Scotland, two countries that are similar in terms of educational expansion and non-selective organisation of the secondary-school system, but different in the degree of curriculum differentiation at post-compulsory level and of standardisation of HE entry requirements.<sup>13</sup> In Scotland a flexible system of curriculum choice allows significant differentiation to emerge in the number and types of subjects that upper secondary students take for their final school examinations (Highers). This is coupled with low standardised (and decentralised) HE admission practices in which HE institutions are free to determine the criteria for selecting applicants. In contrast, in Ireland upper secondary students are required to study three compulsory subjects (English, maths and Irish) and typically take six to eight subjects in the Leaving Certificate exam. Moreover, places in HE are allocated through a centralised system that considers students' grades achieved in the Leaving Certificate as the main criterion for admission.

Drawing from the existing literature on the role of stratification and standardisation of education system in the reproduction of social inequalities (Allmendinger, 1989; Ayalon & Gamoran, 2000; Ayalon, 2006; Bol *et al.*, 2014), we hypothesised that the Scottish system leaves more leeway for social inequalities in the chance of entering HE to occur via educational choices (i.e. subject choices) than in Ireland (*hypothesis 1*). We also predicted that the intermediary role of subject choice was more strongly associated with entry to the ancient and old universities in Scotland and less strongly associated to university entry in Ireland (*hypothesis 2*). Our results confirmed our expectations that in Scotland subject choices are the main mechanism by which family (dis)advantage in the chances of entering HE (in particular, in entering the most prestigious institutions) is transmitted while in Ireland prior attainment is the main differentiating factor in the last cohort.

We also predicted the growing importance of 'school subjects' over time as a mediator of social inequalities in HE entry. We expected that, given the growing competition for entry into HE, students from more advantaged backgrounds would increasingly use subject choices as a means to differentiate themselves from other students and thus facilitate their access to HE (Lucas, 2001). The results did not confirm our (third) hypothesis. Over time subject choice remained a strong mediator of social inequalities in HE entry (especially in access to ancient and old universities) in Scotland but did not increase in importance. On the contrary, the mediating role of subject choice reduced in Ireland. Interestingly in both countries in the youngest cohort all social class differences in HE entry could be explained by school subject choice and performance.

These results have important implications for both sociological research and policy development. Taking account of subject choice provides a more complete understanding of the processes shaping social inequality. While the implications of the differentiation into academic and vocational tracks at an early age for educational

inequality in systems such as Germany have long been recognised, there has been much less attention given to the role of curriculum differentiation in 'general' educational systems where tacit knowledge about the importance of taking valued and valuable subjects may confer significant advantages on middle-class families. From a policy perspective, the findings highlight the necessity to address deep-rooted inequalities in educational pathways in order to equalise access to HE but suggest different policy implications in the two countries. In Scotland, the importance of subject choice in entry to HE institutions, especially elite universities, points to the need to provide working-class young people with clear information and support in their curriculum decisions throughout their school career. In Ireland policies aimed at reducing social inequalities in HE should concentrate on tackling inequalities in overall attainment at upper secondary level, given its central role in driving HE access.

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## NOTES

- <sup>1</sup> This term is used in preference to 'curriculum standardisation' to avoid confusion as both systems have standardised subject syllabi and examination formats but differentiation in the subjects taken by students.
- <sup>2</sup> We could not analyse the transition from lower-secondary to upper-secondary education since the Irish survey is a leaver rather than a cohort survey. Analyses for Scotland indicate that upper secondary students have become less selective in terms of class of origin over time.
- <sup>3</sup> For a detailed discussion of the HE sector in Scotland, see Iannelli *et al.* (2011).
- <sup>4</sup> Private colleges are excluded from this analysis since the number of cases was too small to be considered as a separate category.
- <sup>5</sup> For Scotland, information on subject choice is not included in the EYT time series data but has been collected as part of the SSLs for the cohorts 1987–1993 by the Centre for Educational Sociology in the University of Edinburgh. For the last three cohorts 1999, 2001 and 2005 administrative SQA (Scottish Qualification Authority) data on subject choice and performance were linked to the SSLs data. We are grateful to Linda Croxford for providing us with these data and for her crucial support in the construction of data on subject choice over time. For the last wave of Irish data, information on subjects taken was matched from State Examinations Commission records with the permission of respondents. Prior to this, information on subject choice was collected through the survey.
- <sup>6</sup> <http://wwwucas.com/how-it-all-works/explore-your-options/entry-requirements/tariff-tables/IrishCert>.
- <sup>7</sup> These school types reflect historical differences in governance and funding but all of the schools operate within a common curriculum and examination structure.
- <sup>8</sup> Less than 50% of the cases would be part of our analytical sample.
- <sup>9</sup> For Scotland, the percentage of cases not included in our sample is 2% (1987–1991), 2% (1993), 7% (1999–2001) and 2% (2005). For Ireland, the percentage of missing data is 11% (1987–1991), 20% (1993) and 20% (2005). The data are not completely missing at random (CMAR): students who do not enter higher education are slightly more likely to have missing values on key variables, a pattern that is consistent across cohorts. There is insufficient background information to use multiple imputation on the Irish data. However, including a dummy for missingness on subject-specific performance in the analysis does not change the gross effect of social origin for any of the Irish cohorts.
- <sup>10</sup> It is not possible to systematically compare the distributions of Irish and Scottish workers across ESeC categories. However, examining broad SOC categories from the Scottish and Irish Labour Force Surveys for 2014 (Scottish Government, 2015; CSO, 2015) shows only a slight difference in the proportion in managerial or professional groups in Scotland and Ireland (38% compared with 36%). It is worth noting that these patterns relate to all those in employment rather than those who are parents of school leavers so further detailed analysis of microdata would be necessary to unpack these potential differences.
- <sup>11</sup> In contrast to the situation in Scotland, facilitating subjects have no formal status in access to Irish HE. However, they encompass a range of academic subjects that are seen as valued knowledge and are linked to higher status fields of study within HE.

- <sup>12</sup> Social class gaps in the choice of subjects are particularly pronounced in languages, physics and chemistry. These are also the subjects that are most strongly associated with HE entry.
- <sup>13</sup> We acknowledge that the two systems differ in other important respects, for example, in the structure of tuition fees and student funding. This should not affect the conclusions drawn given our focus on the role of subject choice in mediating HE entry rather than on the relative differences in social class differentiation in the two systems.

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## SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

**Table S1.** AMEs on the probability of HE entry in Scotland, 1987–1991.

**Table S2.** AMEs on the probability of HE entry in Scotland, 1993.

**Table S3.** AMEs on the probability of HE entry in Scotland, 1999–2001.

**Table S4.** AMEs on the probability of HE entry in Scotland, 2005.

**Table S5.** AMEs on the probability of HE entry in Ireland, 1987–1991.

**Table S6.** AMEs on the probability of HE entry in Ireland, 1993.

**Table S7.** AMEs on the probability of HE entry in Ireland, 2005.

**Table S8.** AMEs on the probabilities of entering HE institutions in Scotland, 1987–1991.

**Table S9.** AMEs on the probabilities of entering HE institutions in Scotland, 1993.



**Table S10.** AMEs on the probabilities of entering HE institutions in Scotland, 1999–2001.

**Table S11.** AMEs on the probabilities of entering HE institutions in Scotland, 2005.

**Table S12.** AMEs on the probabilities of entering HE institutions in Ireland, 1987–1991.

**Table S13.** AMEs on the probabilities of entering HE institutions in Ireland, 1993.

**Table S14.** AMEs on the probabilities of entering HE institutions in Ireland, 2005.

## 1. Appendix

Table A1. Descriptive statistics for each school-leaver cohort and country

	Scotland				Ireland		
	1987–91	1993	1999–2001	2005	1987–91	1993	2005
<i>Higher education: Yes</i>	44	60	61	50	41	46	49
<i>HE institution</i>							
Ancient universities	29	26	28	26			
Old universities	16	19	23	23			
New universities	37	33	24	21			
FE colleges	13	18	20	26			
Inst. outside Scot.	6	4	5	4			
Public universities					45	48	52
Inst. of technology					49	46	46
Private colleges					6	6	2
<i>Parents' class origin</i>							
ESeC1: High. salariat	28	25	23	18	14	12	20
ESeC2: Low. salariat	15	21	24	23	9	10	15
ESeC3–6: Intermed.	23	23	20	20	34	30	25
ESeC7–9: Working	30	27	25	35	42	47	35
Unclassified	4	4	8	5	1	2	6
<i>Subject studied</i>							
Irish					94	93	96
English	81	88	85	84	100	99	100
Languages: 1 subj.	17	18	15	19	63	67	73
2 or more	5	4	3	4	5	5	2
Math: 1 subj.	51	49	54	69	96	97	96
2 or more	4	3	2	1	3	2	3
Biology	26	33	35	28	45	47	48
Chemistry	36	33	31	24	18	12	13
Physics	32	31	31	24	22	21	16
Geography	25	30	23	20	37	41	53
History	24	24	20	22	32	27	19
Business: 1 subj.	21	21	21	27	42	48	45
2 or more	3	3	6	11	8	7	5
Technology: 1 subj.	9	8	11	13	10	10	13
2 or more	1	1	0	2	9	9	10
Arts & social.: 1 subj.	33	38	38	37	30	28	34
2 or more	7	9	13	20	2	1	3
Other studies: 1 subj.	13	12	28	36	37	40	34
2 or more	1	0	4	12	1	0	14
<i>Gender: Female</i>	54	56	53	51	55	53	53
<i>Type of school</i>							
State school	94	93	92	94			
Independent school	6	7	8	6			
Roman Catholic	15	13	15	15			
Non-denominational	85	87	85	85			
Secondary					63	57	45
Vocational					27	34	35
Comprehensive					9	9	21
<i>N</i>	6211	1698	5102	2593	3895	1297	1078

Source: Scottish and Irish School-Leavers Surveys, weighted.